Claims

1. A method for signal evaluation of an electronic image sensor in the course of pattern recognition of the image contents of a test body, wherein the image sensor receives a light input signal and is an electrical output signal which correlates with the light input signal, with the following steps:

- analysis of the image content (03) of a window (01) of a size of n x n pixels (02) by means of
- converting the output signal indirectly or directly emitted by the image sensor into at least one invariant characteristic value (06) by means of at least one calculation specification (04, 07),
- weighting of the characteristic value (08) with at least one indistinct affiliation function (13), wherein the affiliation function (13) is in a functional connection with the value range of the characteristic value (08),
- generating a higher order indistinct affiliation function (16) by linking all affiliation functions (13) by means of a calculation specification (14, 15) consisting of at least one rule,
- determining a sympathetic value (18) from the higher order indistinct affiliation function (16),
- comparing the sympathetic value (18) with a threshold value (21),
- deciding a class affiliation (19).

2. A method for signal evaluation of an electronic image sensor in the course of pattern recognition of the image contents of a test body, wherein the image sensor

receives a light input signal and is an electrical output signal which correlates with the light input signal, with the following steps:

- analysis of the image content (03) of a window (01) of a size of n x n pixels (02),
- two-dimensional spectra are defined from these image contents (03),
- spectral amplitude values are calculated from these two-dimensional spectra and are linked with each other, so that only one sympathetic value (18) per window is created.

3. The method in accordance with claim 1, characterized in that only a single sympathetic value (18) is calculated per window (01) of a size of n x n pixels.

4. The method for signal evaluation in accordance with claim 1 or 2, characterized in that the image of the test body to be evaluated is divided into N x N grid-like arranged windows (01) of the size of n x n pixels (02).

5. The method for signal evaluation in accordance with claim 1 or 2, characterized in that the sympathetic value (18) is determined in particular in accordance with a main emphasis and/or maximum method.

6. The method in accordance with claim 1 or 2, characterized in that the sympathetic value (18) are not linear.

7. The method for signal evaluation in accordance with claim 1 or 2, characterized in that the method is divided into a learning phase and a work phase wherein, in the

learning phase, at least one parameter and/or at least one threshold value (21) is defined and matched, and wherein in the work phase the image content (03) of a test body is evaluated on the basis of the results from the learning phase.

8. The method in accordance with claim 1 or 2, characterized in that in a learning phase the class affiliation is trained, i.e. the affiliation function (13, 16) is taught.

9. The method in accordance with claim 1 or 2, characterized in that an output value for the sympathetic value (18) is formed from the following equation:

the output value of the distance measurement (sympathetic value) is $\mu = 2^{-z}$, wherein

$$z = \frac{1}{M}\sum_{x=0}^{M-1}\left(\frac{\left|m_x - x_0(m_x)\right|}{C_x}\right)^D, 0 \le z \le 10, z > 10 \Rightarrow \mu(z) \equiv 0.$$

x = a counting index, M = the number of characteristics, m = characteristic, x_0 = mean value of C_{diff}, D = power, μ = sympathetic value, C_{diff} = difference measurement of the expansion value C.

10. The method for signal evaluation in accordance with claim 1 or 2, characterized in that the calculation specification (04) for converting the signal from the image sensor into an invariant characteristic value (08) is a two-dimensional mathematical spectral transformation method (04), in particular a two-dimensional Fourier, or Walsh, or Hadamard, or circular transformation.

11. The method for signal evaluation in accordance with claim 1, characterized in that a characteristic value (08) is represented by the amount of a spectral coefficient (06).

12. The method for signal evaluation in accordance with claim 1, characterized in that at least one affiliation function (13) is described by at least one parameter.

13. The method for signal evaluation in accordance with claim 1, characterized in that the affiliation functions (13) are unimodal functions.

14. The method for signal evaluation in accordance with claim 1, characterized in that the higher order affiliation function (16) is a multimodal function.

15. The method for signal evaluation in accordance with claim 1, characterized in that the affiliation functions (13) and/or the higher order affiliation function (16) is (are) potential functions.

16. The method for signal evaluation in accordance with claim 1, characterized in that at least one calculation specification (14, 15), by means of which the affiliation functions (13) are linked with each other, is a conjunctive calculation specification (14, 15) within the meaning of an IF ...THEN linkage.

17. The method for signal evaluation in accordance with claim 1, characterized in that the generation of the higher order indistinct affiliation function (16) takes place

by processing of the partial steps of premise evaluation, activation and aggregation (15), wherein in the premise evaluation an affiliation value is determined for each IF portion of a calculation specification (14, 15), and wherein in the activation an affiliation function is fixed for each IF ... THEN calculation specification, and wherein during the aggregation (15) the higher order affiliation function (16) is generated by superimposing all affiliation functions (13) created during the activation.

18. The method in accordance with claim 2, characterized in that the sympathetic value (18) is determined by means of fuzzy logic.

19. A method for signal evaluation of an electronic image sensor in the course of pattern recognition of the image contents of a test body, wherein the image sensor receives a light input signal and is an electrical output signal which correlates with the light input signal, with the following steps:

- spectra are generated from at least one image content (03),
- the spectral transformation is generated by means of a circular transformation.

20. The method in accordance with claim 19, characterized in that an invariant spectrum is generated.

21. The method in accordance with claim 20, characterized in that the invariance property can be adjusted by means of the transformation coefficients.

22. The method in accordance with claim 19, characterized in that the circular transformation is performed with real coefficients.

23. The method in accordance with claim 19, characterized in that associated work coefficients are formed by combining spectral coefficients in groups.